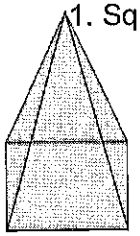
Mrs. Hayden

Name_____ Date_____

Area and Volume Review (Chapters 12 & 13)

Find p, B, LA, TA, and V for the following shapes.

1. Square Pyramid

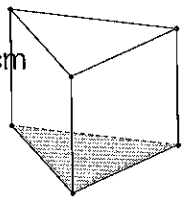


6cm
h = 4cm
l= 5cm

p = 24cm
B = 36cm²
LA = 60cm²
TA = 96cm²
V = 48cm³

LA = ½ 24 · 5 V = ⅓ π · 4

2. Triangular Prism
(Base is equilateral)

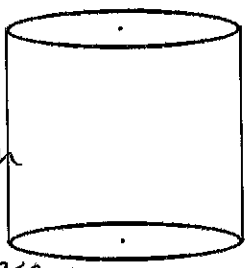


p = 24cm
B = 16√3 cm²
LA = 168cm² ph
TA = ~~183.4~~ 223.4 cm²
V = 112√3 cm³

16√3 · 7

3. Cylinder

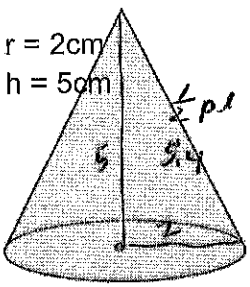
r = 5 in
h = 8 in



p = 10π in
B = 25π in²
LA = 80π in² ph
TA = 130π in²
V = 200π in³

25π · 8

4. Cone
(round answers for #4)

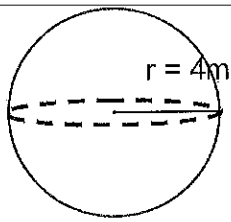


p = 4π ≈ 12.6 cm
B = 4π ≈ 12.6 cm²
LA = 33.9 cm²
TA = 46.5cm²
V = 21.0 cm³

½ pl

⅓ 4π · 5

5. Sphere

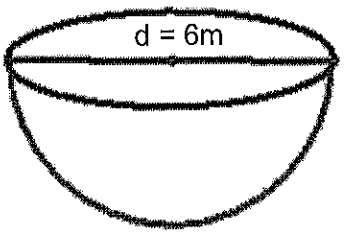


A = 64π m² 4π 4²
V = 85⅓ π m³

⅓ π 4³

6. Hemisphere

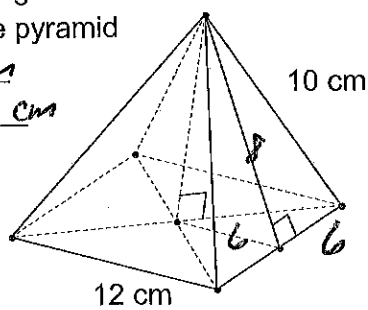
A = 27π m² 3π 3²
V = 18π m³ 27/3 π 3³



Use Pythagorean Theorem to find height and/or slant height.

7. Square pyramid

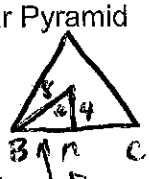
l= 8cm
h = 2√7 cm



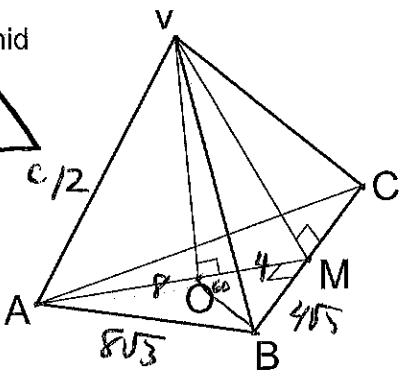
64 = 36 + h²
28 = h²
2√7

8. Regular Triangular Pyramid

h = 4√5 cm
AB = 8√3 cm
AV = 12 cm

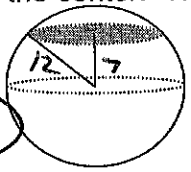


144 = 64 + h²
80 = h²



9. A plane intersects a sphere 7 cm from the center. The radius of the sphere is 12cm. What is the area of the circle formed?

144 = 49 + r²
95 = r²

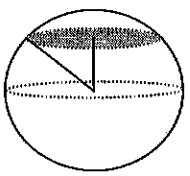


A = 95π cm²

10. A plane intersects a sphere 15 cm from the center. The radius of the sphere is 18cm. What is the area of the circle formed?

18² = ~~12²~~ + r²
15²

99 = r²



A = 99π cm²

11. A sphere has a volume of 972π in^3. What is the radius?

$\frac{3}{4}[972\pi = \frac{4}{3}\pi r^3]$

$\sqrt[3]{729} = \sqrt[3]{r^3}$

9in = r

12. A prism has a lateral area of 192cm^2. The perimeter of the base is 24 cm. What is the height of the prism?

$LA = ph$

$192 = 24 \cdot h$

8cm = h

13. The volume of a square prism is 432cm^3. The height is 2 x side of the square. What is the length of a side?

$h = 2x$

$V = Bh$

$432 = x^2 \cdot 2x$

$432 = 2x^3$

$x^3 = 216$

$x = 6$ cm

14. Two similar prisms have heights of 5cm and 9 cm.

What is the scale factor? 5:9

What is the ratio of perimeters? 5:9

What is the ratio of areas? 25:81

What is the ratio of volumes? 125:729

$\frac{125}{729} = \frac{24}{V}$ 140.0 cm3

The volume of the smaller prism is 24 cm^3. What is the volume of the larger? ~~129~~

15. Two similar cones have lateral areas of 6π cm^2 and 96π cm^2.

What is the scale factor? 1:4

What is the ratio of perimeters? 1:4

What is the ratio of volumes? 1:64

$\frac{6\pi}{96\pi} = \frac{1}{16}$

The volume of the larger cone is 128 cm^3. What is the volume of the smaller? 2cm^3

$\frac{1}{64} = \frac{V}{128}$

$V = 2\text{cm}^3$